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Synthesis, characterization, antimicrobial, anti-diabetic, anti-inflammatory and anti-cancer studies of Schiff base metal(II) complexes derived from mixed Schiff base ligands

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A new Schiff base with ligands (L^1 and L^2) has been prepared from cinnamaldehyde with aniline (L^1) and 4-hydroxy-3-methoxybenzaldehyde with *o*-nitroaniline in 1:1 molar ratio. The mononuclear metal(II) complexes **[(ML^1L^2)]** [M= Co(II), Ni(II), Cu(II) and Zn(II)] have been synthesized and characterized. ML^1L^2 synthesized from ligand (L^1), metal salts and ligand (L^2) molar ratio is 1:1:1. Elemental analyses, IR, NMR, Electronic spectra, SEM and molar conductivity have been obtained to clarify the structure of synthesized metal(II) complexes. Square planar geometry is proposed for CoL^1L^2, NiL^1L^2 and ZnL^1L^2, and distorted square planar geometry for CuL^1L^2 complex. Antibacterial activity of metal(II) complexes, ML^1L^2 have been tested against Gram(+) and Gram(−) bacteria and fungi. The anti-inflammatory and anti-diabetic actions of the L^1, L^2, CuL^1L^2complexes have been studied. The anticancer activity of L^1, L^2 and CuL^1L^2 have been studied as opposed to MCF-7 using MTT assay method.

Keywords: Mixed ligand complexes, Anti-diabetic, Anti-cancer, Anti-inflammatory